Middle Ordovician Simpson equivalents are not present because of nondeposition or erosion.

The nearshore to supratidal El Paso Group section faunal zones have been correlated tentatively with the deeper water, miogeosynclinal, western standard section (Ibex and Garden City, Utah composite sections) of Hintze (1951, 1952) and Ross (1951).

Paleoecological studies of the sabkhas to nearshore sediments of the El Paso Group strata show excellent examples of digitate algae, stromatolithic algae, and cyclic reefoid mound structures. Recent sedimentation in the Khor al Bozam (Persian Gulf) and Shark's Bay (Australia) probably are modern analogues.

WILTON J. BROWN, Tucker Drilling Co., San Angelo, Tex.

BLOODWORTH NORTHEAST FIELD, COKE AND NOLAN COUNTIES, TEXAS

The Bloodworth Northeast field was discovered in February 1967. The discovery well was the Tucker Drilling Co., Inc., and Peter Henderson Oil Co. No. 1 Foster S. Price, 0.5 mi south of the Nolan County line in Coke County, Texas, and approximately 15 mi northwest of Robert Lee. The producing reservoir is a Canyon (Upper Pennsylvanian) sandstone having 44 ft of unbroken permeability and 18% porosity. A drill-stem test was run in the upper 14 ft of the sandstone section. Gas surfaced in 5 minutes and oil, flowing strongly, surfaced in 30 minutes. In December 1968 there were 28 producing wells and 6 dry holes; 9 of these are multiple completions.

This oil field was discovered as a result of drilling along a productive trend; isopach maps provided the principal lead to the discovery.

The writer had observed that all sandstones within a 350-ft-thick zone contain hydrocarbons regardless of structural position or any other geologic characteristic. Accordingly, cumulative sandstone isopach maps were prepared from spontaneous potential curves. The isopach map on which the discovery well was drilled indicated that 50 ft of sandstone would be present.

The writer believes that the sandstone was deposited originally by turbidity currents in compaction troughs adjacent to the Pennsylvanian reef mounds of the area.

The Texas Railroad Commission recognizes three separate sandstone zones in this field.

RODGER E. DENISON, Research Dept., Mobil Research and Development Corp., Dallas, Tex.

BASEMENT ROCKS IN WEST TEXAS AND EASTERN NEW MEXICO

(No abstract submitted)

NEIL D. OPDYKE, Lamont Geological Observatory, Columbia Univ., Palisades, N.Y.

PALEOMAGNETIC CORRELATION

There are two ways in which paleomagnetic results can be used to correlate rock formations with each other. The first is achieved by using an established paleomagnetic polar-wander curve and matching new results to this curve. The second is by determining a reversal sequence and using this to correlate sedimentary strata.

In the past, both methods have been successful, the first in correlating older rocks and the second in dealing with rocks of Pliocene and Pleistocene ages. The reversal method is discussed in respect to its recent successful application to marine sediments of Miocene or younger age. The possible extension of this technique to older rocks is investigated and a recent successful application of magnetic reversal stratigraphy in rocks of Triassic age is outlined. It is reasonable to predict that reversal sequences will be of most value in older rocks where independent faunal or mineralogical control is present. It should also be of value as a well-logging tool for correlations within individual sedimentary basins.

CORWIN C. REEVES, JR., Dept. of Geosciences, Texas Technical College, Lubbock, Tex.

TEXAS LINEAMENT: PLEISTOCENE-HOLOCENE MOVEMENT?

Post-Pliocene movement along the Texas lineament is indicated by analysis of regional joint-fracture-fault systems in northwestern Chihuahua, Mexico, and on the southern High Plains, Texas.

The southern High Plains, Texas, show evidence of a regional force couple created by stresses along the Texas lineament on the south and the Wichita lineament on the north. Pleistocene to Holocene stresses along the Texas lineament have been right-lateral, but the Llano Estacado of West Texas exhibits evidence of both right- and left-lateral stresses along the Wichita lineament.

WULF A. GOSE, Southwest Center for Advanced Studies, Dallas, Tex.

MOSSBAUER STUDIES ON A LARGE GRIPHITE CRYSTAL

The Mossbauer effect has been used to measure the ferric to ferrous iron ratio in two perpendicular profiles across a 5-ft griphite crystal. No ferric iron is observed in the center of the crystal. The amount of Fe^{+3} increases rather systematically toward the margins. This increase is interpreted to have been produced by a secondary alteration caused by hydrothermal solution or weathering. These observations are in agreement with strontium isotope studies reported earlier.

ROBERT C. SHUMAKER, Humble Oil & Refining Company, Midland, Tex.

DISHARMONIC FOLDING IN IRAN

Exploration for petroleum in the Iranian Zagros folded belt has revealed spectacular disharmony between surficial folds in the terrigenous clastic Fars-Bakhtiari sediments and deeper folds in and below the Asmari Limestone, the major producing formation. Anhydritic marl, and locally thick salt of the Lower Fars stage I mobile unit, separate the two disharmonic fold sets. Some geologists have interpreted the disharmonic folding to have developed essentially in place without significant differential movement between the two fold sets. An alternate interpretation more compatible with the structural details proposes differential movement of two uniquely folded litho-structural sequences. A time-lapse movie of a dynamic model illustrates how such disharmonic folds may develop.

STANLEY E. CEBULL, Department of Geosciences, Texas Technological College, Lubbock, Tex.

CHARACTERISTICS AND TECTONIC SETTING OF GROWTH FAULTS IN EASTERN VENEZUELAN BASIN

Subsurface faults were studied across an area of approximately 160 sq km of the Eastern Venezuelan

basin, a foredeep of an earlier formed geosyncline. Among the significant characteristics of these faults are: (1) an arcuate shape in map view, the concave side being toward the craton (Guayana shield) on the south; (2) cratonward dips at unusually low angles, averaging approximately 34°; (3) general increase in throw with depth, the faults evidently extending into basement; and (4) upthrown (north side) sedimentary thicknesses showing "normal" cratonward thinning, whereas downthrown sections are anomalously thick.

Evidence indicates that these are growth faults whose movements extended during a period of time ranging from at least the Oligocene into the Pliocene. Such movements, at least in part, appear to have taken place concurrently with thrust faulting on the northern margin of the basin and with possible large-scale strike-slip displacements still farther north, near the edge of the Caribbean Sea.

ROCKY MOUNTAIN SECTION

18TH ANNUAL MEETING

Albuquerque, New Mexico
February 23–26, 1969

The 18th annual meeting of the Rocky Mountain Section of AAPG will be held in Albuquerque, New Mexico, February 23–26, 1969. The technical program's theme is "Total Energy"—relating to the new ideas and new developments in the Rocky Mountain region's exploration and development of oil, gas, uranium, coal, and other energy materials and sources.

The technical papers include the federal government's viewpoint of the total energy picture, the total energy relations of the nation as related to the Rocky Mountain region, the economics of the various energy resources, and separate papers on gas, uranium, oil, geothermal power, tar sands, and nuclear stimulation of gas production.

Area presentations will highlight the Muddy Sandstone, Bell Creek field, South Coyote Creek field, Toadlena anticline, helium, Project Thunderbird, Project Gasbuggy, remote sensing techniques in petroleum exploration, western Wyoming Triassic stratigraphy, and the Wind River basin.

A symposium of coal-energy resources, moderated by RICHARD F. PERKINS, will feature papers on most of the Rocky Mountain states coal fields, ranging from the Raton field on the east, to the Kaiparowits Plateau coal on the west, and north to Montana's Livingston coal deposits.

The field trip will be repeated several times during the meeting; it will be a geological tour up the Sandia Peak Tramway, to see the geology exposed along the west scarp of the 2-mi-high Sandia Mountains, and view the regional geomorphic features within a 100-mi radius of Albuquerque from the platform, lounge, and dining room atop the Sandias. Late February weather usually is clear and sunny, allowing maximum views.

The ladies' program will center around the typical Spanish-American and Indian attractions for which north-central New Mexico is noted, such as pueblos, jewelry, pottery, woven materials, sand paintings, and spicy Spanish food.

FIELD TRIPS

The field trips—escorted rides up the tramway to the crest of the Sandia Mountains, with geologists on each car to describe the geology and landscape as the cars go up, and with VINCENT KELLEY at the top to give a general view of north-central New Mexico—will be held on Monday and Tuesday, February 24 and 25, from 3 to 5 P.M. Special tramway rates will be available.

LADIES PROGRAM

SUNDAY, FEBRUARY 23

Evening cocktail mixer
Hilton Hotel

MONDAY, FEBRUARY 24

Welcoming luncheon at La Placita in Old Town. Style show and door prizes. Time for shopping in Old Town before and/or after luncheon.

TUESDAY, FEBRUARY 25

Bus tour to Santa Fe, historic capitol and art center of New Mexico. Cocktails and luncheon at La Fonda. Museums and shopping.
9:00 P.M. Dance and midnight breakfast.

WEDNESDAY, FEBRUARY 26

Tour of the University of New Mexico
Lunch at Fred Harvey's Sunport Restaurant

Wives are welcome to join the men Monday or Tuesday afternoon, 3:00–5:00 P.M. on a trip via tram to Sandia Peak. Dinner may be had at the Summit House if desired. Reservations are necessary.

TECHNICAL PROGRAM SUMMARY

MONDAY MORNING, FEBRUARY 24

1. KEYNOTE SPEAKER: Total energy — 9:30
2. ROBERT L. DUNCAN: Energy resources of Rocky Mountain region — 10:00
3. JOHN D. HAUN,* JAMES A. BARLOW, JR., DONALD E. HALLINGER: Gas potential of Rocky Mountain region — 10:30
4. HOWARD A. MEYERHOFF: Competitive position of energy resources in Rocky Mountain region — 11:00
5. VINCENT C. KELLEY, PAUL E. MELANCON, DALE F. KITTEL*: Uranium deposits of Grants region — 11:30

MONDAY AFTERNOON, FEBRUARY 24

1. HENRY S. BIRDSEYE: Geothermics in North America, present and future — 2:00
2. LEE A. WOODWARD: Petroleum exploration in western United States in light of principles of comparative tectonics — 2:30
3. LEO GARWIN: Helium: an unnatural natural gas — 3:00
4. WILLIAM B. MARTIN: Preliminary observations of postshot geologic effects of Gasbuggy nuclear stimulation experiment, northeastern San Juan basin, New Mexico — 3:30

TUESDAY MORNING, FEBRUARY 25

1. RICHARD F. PERKINS: Coal resources of Rocky Mountains and their future utilization — 9:00

* Denotes speaker.